DECISION DOCUMENTATION PACKAGE
COVER SHEET

PREPARED IN ACCORDANCE WITH

TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY HAZARD SITES
AT INEL

SITE DESCRIPTION: CPP-24 TANK FARM BUCKET SPILL

SITE ID: CPP-24 **OPERABLE UNIT:** 3-07

WASTE AREA GROUP: 3

I. SUMMARY - PHYSICAL DESCRIPTION OF THE SITE:

CPP-24 is the result of a bucket spill (approximately 1 gallon) of radioactively contaminated solution that occurred on February 16, 1954. A survey at the time of the incident determined an area approximately 3 feet by 6 feet to be contaminated to levels of approximately 400 mR/hr. The exact location of the site was not documented. The site is in the vicinity of one of the HLLW tank WM-180 risers. All contamination was the result of this spill, and according to the Radioactivity Incident Report decontamination of the contaminated soil and tank was initiated.

II. SUMMARY - QUALITATIVE ASSESSMENT OF RISK:

Due to the quantity of the spill and cleanup of the area, the qualitative assessment of risk would be low with a medium to high overall reliability. This is based on the following conclusions. The area (3′ x 6′) of the bucket spill (approximately 1 gallon) was to be cleaned up as directed in the Radioactivity Incident Report. No surface radiation readings have been encountered during surveys of the area.

III. SUMMARY - CONSEQUENCES OF ERROR:

Based upon process knowledge, low level radiation would be expected in the soil as a result of this spill. Compared to the balance of the tank farm sites, which contain high level liquid waste, this site will not contribute significantly to the background radiation levels found in the tank farm. The effort to find the small spill (3′ x 6′) in the area of the unit boundary (15′ x 40′) would require a large number of boreholes to be drilled. Due to the potential of hitting a pipe during drilling, a risk to human health, safety, and the environment could be high. This is based on current utility maps of the area which are only accurate to within five feet. If there is any residual contamination in the unit it will be addressed in more detail or the Comprehensive RI/FS.

IV. SUMMARY - OTHER DECISION DRIVERS:

None

RECOMMENDED ACTION:

The recommended action for CPP-24 is No Further Field Investigation. This recommendation is based on the removal of the contaminated soil during the decontamination measures that took place after the incident, and the results of surface radiation surveys conducted in 1990 and 1991 that do not show levels above background at this site (ref. 2 and 3).

SIGNATURES	# PAGES:	DATE:
Prepared By:	DOE WAG Manager:	
Approved By:	Independent Review:	

PROCESS/WASTE WORKSHEET
SITE ID CPP-24

Col 1 Processes Associated with this Site	Col 2 Waste Description & Handling Procedures	Col 3 Description & Location of any Artifacts/Structures/Disposal Areas Associated with this Waste or Process
Process One-time bucket spill	Radioactively contaminated liquid solution accidently spilled	Artifact: None Location: Near tank WM-180 Description: 3'x 6' area
		Artifact Location Description
		Artifact Location Description
Process		Artifact Location Description
		Artifact Location Description
		Artifact Location Description
Process		Artifact Location Description
		Artifact Location Description
		Artifact Location Description

CONTAMINANT WORKSHEET
SITE ID CPP-24
PROCESS (Col 1) One-time bucket spill **WASTE** (Col 2) **RADIOACTIVE LIQUID**

Col 4 What known/potential hazardous substances/constituents are associated with this waste or process?	Col 5 Potential sources associated with this hazardous material	Col 6 Known/estimated concentration of hazardous substances/ constituents[a]	Col 7 Risk based concentration mg/kg	Col 8 Qualitative risk assessment (Hi/Med/Lo)	Col 9 Overall reliability (Hi/Med/Lo)
Radionuclides max rad = 400 mR	N/A, Contaminated Soil Removed	N/A		Low	Med-High
Metals	N/A, Contaminated Soil Removed	N/A		Low	Med-High
Organics	N/A, Contaminated Soil Removed	N/A		Low	Med-High
Acids	N/A, Contaminated Soil Removed	N/A		Low	Med-High

a. ND = not detected
DL = detection limit in ppm

Question 1. What are the waste generation process locations and dates of operation associated with this site?

Block 1 Answer:

On 2/16/54, a bucket of radioactively contaminated solution, from inside tank WM-180, which was then under construction, was spilled to the ground surface. An area of approximately 3'x 6' was contaminated to approximately 400 mrep/hr. A roentgen equipment physical (rep) is approximately equal to a roentgen equivalent man (rem). All contamination was the result of this spill, no identification of the liquid source was made in the historical report.

Block 2 How reliable is/are the information source/s? _x_High __Med ___Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The incident is documented in the Radioactivity Incident Report (reference 1).

Block 3 Has this INFORMATION been confirmed? __Yes _x_No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

No final report was written on the incident.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[x]	1	Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 2. What are the disposal process locations and dates of operation associated with this site?

Block 1 Answer:

The location of the spill site is only approximately known. According to the UOR, decontamination of the tank and ground began, but completion of the decontamination and final disposition of the soil was not documented. All contamination was due to the spill. No disposal process is associated with the site.

Block 2 How reliable is/are the information source/s? x High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

An UOR was written for the incident and the area was to be cleaned up.

Block 3 Has this INFORMATION been confirmed? __Yes x No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

No final report was written on this incident.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[x]	1	Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 3. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Block 1 Answer:

No, it is believed that the contaminated soil was removed.

Block 2 How reliable is/are the information source/s? __High x Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

No documentation exists on final disposition of the soil.

Block 3 Has this INFORMATION been confirmed? __Yes x No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

No documentation exists.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[ ]
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	Q.A. data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[x] 1	Initial assessment	[ ]
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[ ]		

Question 4. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Block 1 Answer:

No, it is believed that contaminated soil was removed and the tank, WM-180, was decontaminated.

Block 2 How reliable is/are the information source/s? __High x Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The contaminated soil was to be removed per the directions in the Radioactivity Incident Report.

Block 3 Has this INFORMATION been confirmed? __Yes x No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

No final report verifying soil removal or tank decontamination was written.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[ ]
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	Q.A. data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[x] 1	Initial assessment	[ ]
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[ ]		

Question 5. Does site operating or disposal historical information allow estimation of the pattern of potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?

Block 1 Answer:

No, this was a one-time spill of approximately one gallon of liquid solution that covered a 18 square feet area (3′ x 6′). According to the Radioactivity Incident Report the area of the spill was to be cleaned up.

Block 2 How reliable is/are the information source/s? _x_High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

According to an entry in the HP field logbook that is attached to the Radioactivity Incident Report, the tank and contaminated soil were removed.

Block 3 Has this INFORMATION been confirmed? __Yes _x_No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

No final report generated on cleanup of tank and ground.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[ ]
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	Q.A. data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[x] 1	Initial assessment	[ ]
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[ ]		

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Block 1 Answer:

A 3′ x 6′ area was contaminated according to the UOR. The depth of penetration is estimated to be 0.5′.

Potential volume of contaminated soil is: 3 ft * 6 ft * 0.5 ft = 9 ft^3

No source is believed to still exist at this site.

Block 2 How reliable is/are the information source/s? __High x Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The area was described in the Radioactivity Incident Report however, the depth was estimated.

Block 3 Has this INFORMATION been confirmed? __Yes x No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

A final report describing area cleaned up was not written.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[x]	1	Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Block 1 Answer:

Approximately one gallon of solution was spilled. The amount of hazardous contamination present was unknown due to no analysis being performed on the liquid. The contamination is believed to have been cleaned up as directed in the Radioactivity Incident Report.

Block 2 How reliable is/are the information source/s? x High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The amount of solution spilled was described in the Radioactivity Incident Report.

Block 3 Has this INFORMATION been confirmed? __Yes x No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[x]	1	Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 8. Is there evidence that this hazardous substance/constituent is present at the source as it exists today? If so, describe the evidence.

Block 1 Answer:

No. The results of the 1990 and 1991 surface radiation surveys do not indicate the presence of surface radiation above background levels (reference 2 and 3).

Block 2 How reliable is/are the information source/s? x High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

No surface radiation has been detected at this site during the yearly surveys of the ICPP conducted in 1990 and 1991.

Block 3 Has this INFORMATION been confirmed? x Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Yes, the surveys are conducted on a yearly basis.

Block 4 **SOURCES OF INFORMATION** (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[ ]
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	Q.A. data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[ ]	Initial assessment	[ ]
Summary documents	[ ]	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[x] 2, 3		

REFERENCES

1. Radioactivity Incident Report, 2/15/1954, 003700

2. Radioactivity Survey Map, 1990

3. 1990 - 1991 Surface Radioactivity Cleanup Status.

ECA 24 REFERENCE 1.

RADIOACTIVITY INCIDENT REPORT (2)

CPP-24

Supervisor Ip Reichardt Date 2/5/54

H. P. Representative on Duty King, Booth and Miller Time 0930

Location North of 604 Building- Top and interior of WM- 180

Material Involved Mixed Fission Products

Area Affected Top and inside of WM- 180

Description Ground on top of WM- 180 tank to 400 mrep/hr. in spot 6' 3'
Liquid on floor of WM- 180 to 20 mr @ 1"- Bucket of liquid on
floor of tank to 280 mr.

PERSONNEL

NAME		HOW INVOLVED
Phil Reichardt	Operations	Cpp supervisor in charge of area
Ray Miller	Health Physics	Made original HP Survey
Wells Dickenson	AEC	AEC supervisor for job
8 or 9 Kaiser employees	Kaiser	Entered tank and contaminated shoes, hands and pants.

Examinations or Samples Recommended as Follows: Urine samples taken and submitted to Cpp nurse from Kaiser employees.

RADIATION OR CONTAMINATION

Direct Radiation None detectable with Juno at time of contamination discovery.

Contamination To 400 Mr. See above

Air Activity None significant

Immediate Corrective Measures Tank itself and hot ground top of ~~ground~~ tank roped off. Hot shoes, gloves, and pants confiscated. Hot hands washed.

Recommended Preventative Measures Stop liquid draining into WM -180

Undesirable Conditions Remaining After Corrective Action Floor of WM -180 contaminated.

Further Action Decontamination of clothing and WM - 180

(Original to Supervisor via Department Head. Copy to H. P. file via Department Head)

(Over)

Signed- H.P. Representative Raymond L. Miller Date 2/16/54

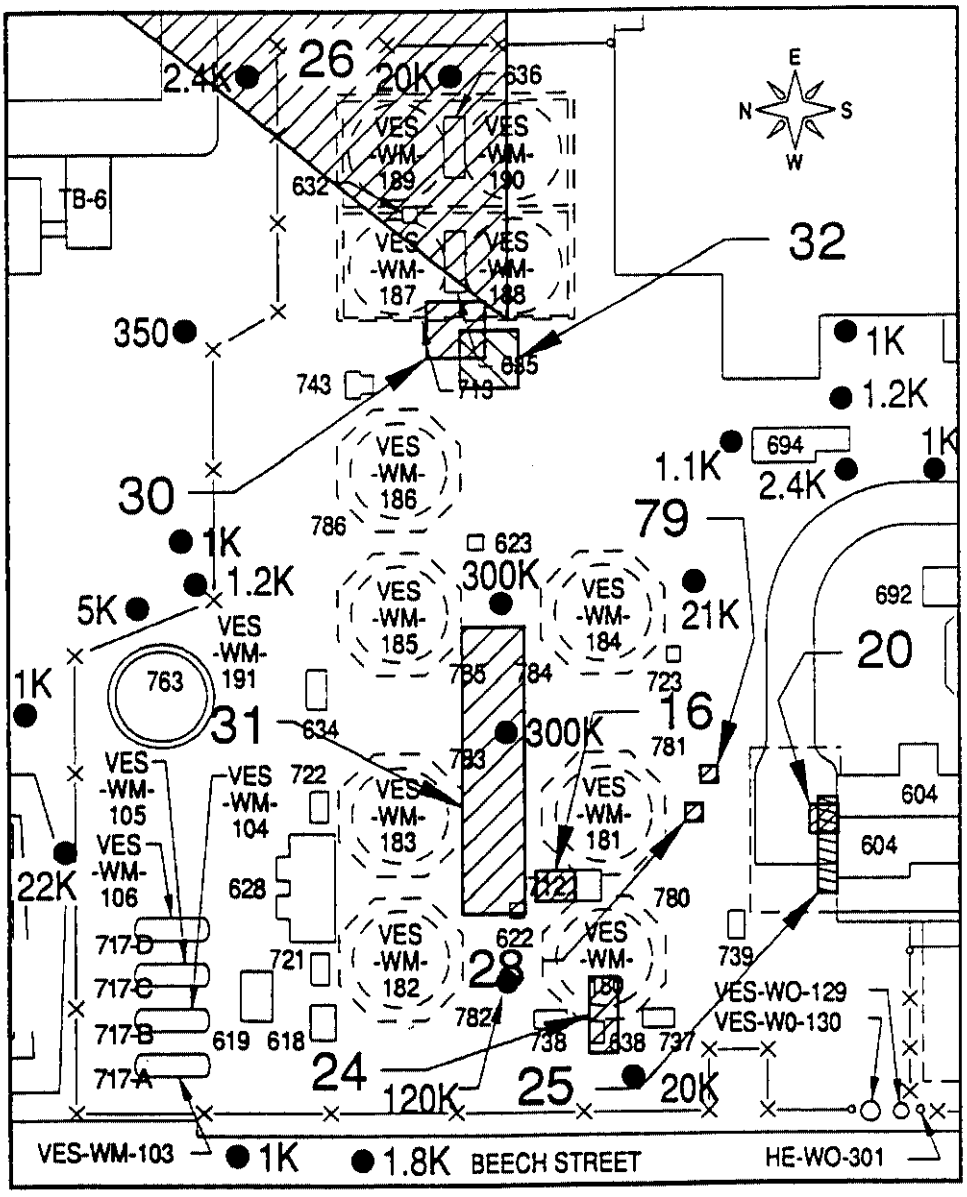
Acknowledged- Supervisor [illegible] Date 2/16/54

Following entry taken from HP log book.

Accompanied Phil Reichardt to top of WM-180 where Kaiser employees are working. Monitored ground where bucket of liquid from inside of WM- 180 had been dumped. Reading to 400 mr found in spot 3' by 6'. Began checking men who had been down into tank and found pants to 5 mr on legs, gloves, shoes, and hands to 10 mr. Down into tank with Reichardt and found bucket of liquid to 230 mr and no high background detectable with Juno. Accompanied all Kaiser men to East end of Boiler house where contaminated clothing was confiscated and hands where decontaminated. Accompanied K. K. Kenedy to bottom of WM- 180 and noted liquid running into tank on South side up high. Liquid on floor reading 25 mr. @ 1" Entered WM- 101 to see if contaminated liquid had entered this tank well. Nothing detected. Also surveyed down on <u>outside</u> of WM- 180 but nothing significant was detected. Operators arrived and decontamination of tank and ground began.

R. L. Miller

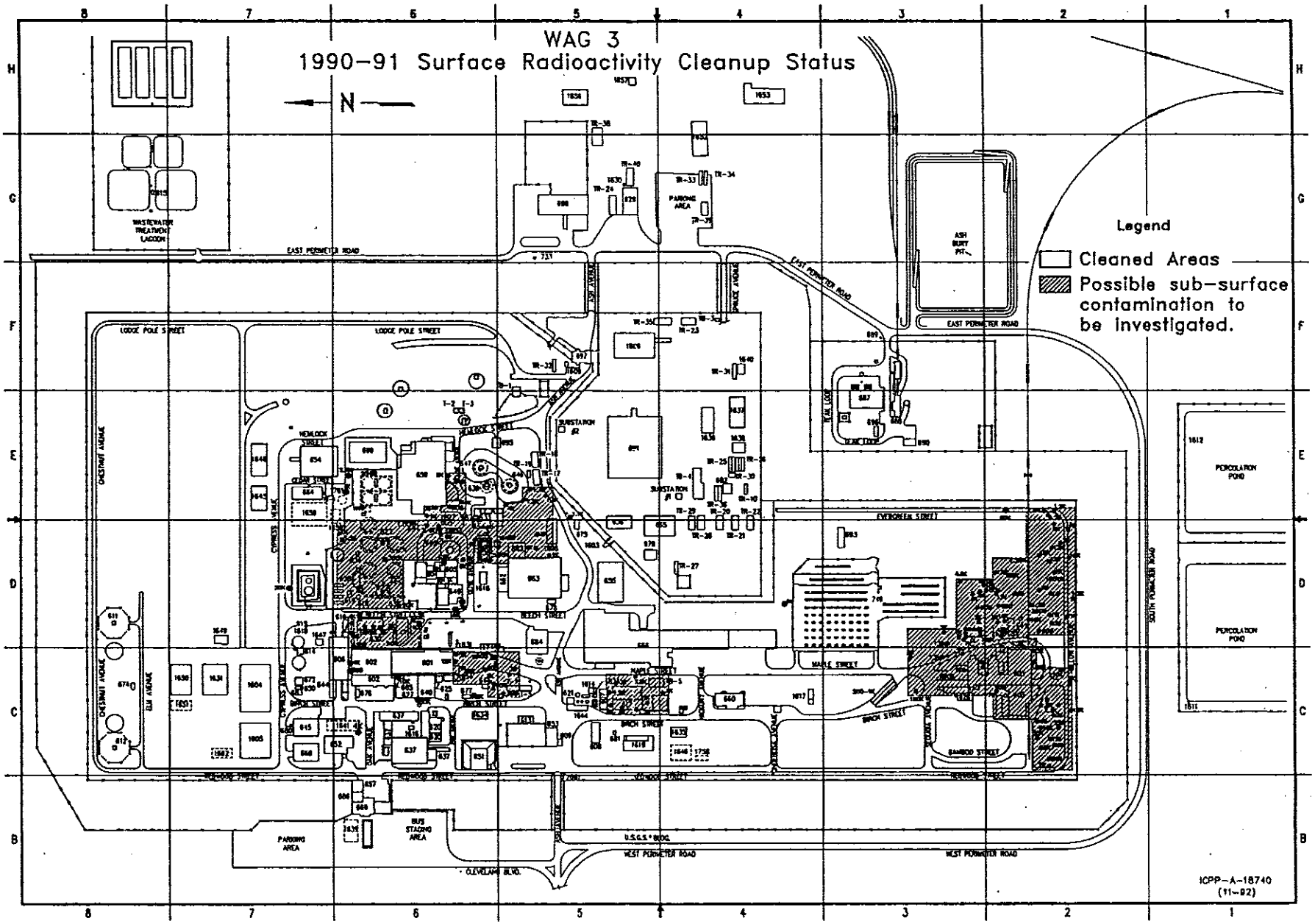
ECA 24 REFERENCE 2



ICPP-A-18051
(12-91)

Site Locations within OU 3-07 with Rad Points

ECA 24 REFERENCE 3


WAG 3
1990–91 Surface Radioactivity Cleanup Status
N
Legend
Cleaned Areas
Possible sub-surface contamination to be investigated.
WASTEWATER TREATMENT LAGOON
EAST PERIMETER ROAD
LODGE POLE STREET
CHESTNUT AVENUE
ELM AVENUE
OAK AVENUE
BIRCH STREET
MAPLE STREET
EVERGREEN STREET
BAMBOO STREET
HEMLOCK STREET
SUBSTATION
PARKING AREA
BUS STAGING AREA
WEST PERIMETER ROAD
CLEVELAND BLVD.
ASH BURY PIT
PERCOLATION POND
PERCOLATION POND
ICPP-A-18740
(11-92)